1891MNRAS..51..119R

It may interest some to know that I commenced building the observatory and house in the month of September 1889, and by September 1890 the buildings were finished and occupied, and some ten tons weight of telescopes, apparatus, and books were dismounted, conveyed, and re-erected on Crowborough Hill within twelve months time.

Accompanying is a photograph of the buildings.

The photographic work was continued at Maghull till the month of June 1890, and resumed at Crowborough in the following October.

Observations of the Planets Victoria and Sappho and comparison stars made with the Meridian Circle at Dunsink. By Arthur A. Rambaut, M.A., Assistant Astronomer at Dunsink Observatory.

(*Communicated by Sir Robert Ball.*)

In accordance with a request of Dr. Gill, the meridian circle and chronograph of the Dunsink Observatory were employed during the summer, autumn, and part of the winter of 1889–90, in observing the minor planets *Victoria* and *Sappho*, as well as the list of comparison stars selected by Dr. Gill for heliometer observations of parallax.

A precisely similar series of observations had been made during the previous year upon the planet *Iris* and comparison stars, the results of which were published in vol. xlix., No. 5, of the *Monthly Notices.*

In passing I should like to take this opportunity to correct a misprint which escaped my notice on p. 313 and subsequent pages of that communication. The date for which the places are computed is there given as 1880·0 throughout the whole list of separate results, instead of 1888·0, as it ought to be. This misprint is, however, the less likely to have misled anybody as the means of these results are correctly given in a collected list at the end of the paper as being for 1888·0.

I regret to say that the observations contained in the present communication are not so complete as might have been wished. Those of the comparison stars for *Victoria* in particular are a mere fragment of what it was proposed to obtain, owing to frequent interruption which occurred in the work; and although the results for the *Sappho* list are more satisfactory, there are still some stars of which I failed to get as many observations as suggested by Dr. Gill.

The places of the stars given below are, as in the case of the *Iris* list, differential, both in right ascension and declination, the clock error and the equator point of the circle being always determined by observations of a few stars selected from the *Berliner Jahrbuch.*

1891MNRAS..51..119R

(I.) *Victoria and Comparison Stars.*—In the case of the *Victoria* series the standard stars selected were:—

List of Standard Stars.

No.	No. in Fund. Cat.	Name.	Mean R.A. 1889·0.	Mean Decl. 1889·0.
			h m s	° ′ ″
1	257	η Serpentis	18 15 33·936	− 2 55 36·96
2	266	θ Serpentis p.	18 50 42·062	+ 4 3 35·53
3	269	λ Aquilæ	19 0 21·464	− 5 2 54·37
4	604	π Sagittarii	19 3 9·754	−21 11 58·31
5	290	ε Delphini	20 27 54·589	+10 55 34·83
6	610	υ Capricorni	20 33 43·848	−18 31 44·22
7	297	ε Aquarii	20 41 40·012	− 9 54 6·35
8	256	δ Ursæ Min. U.C.	18 8 7·059	+86 36 40·98
9	111	51 H. Cephei L.C.	6 48 16·901	+87 13 9·41
10	508	76 Draconis	20 50 35·033	+82 7 10·40

The numbers in the eighth column of the following table refer to this list, the symbol (α) after a number denoting that the corresponding star has only been observed in Right Ascension. This symbol has been omitted in the case of the last three stars on the list, which were observed only in right ascension for the purpose of determining the azimuth error of the instrument. In other respects the table is similar to the corresponding one in the *Iris* observations, and requires no further explanation.

It should be remarked that throughout the *Victoria* observations the instrument was in the position Clamp W.

Table of Instrumental Corrections at $19^{h}\cdot5$ *Sidereal Time.*

Date.	Incl.	Azim.	Collim.	$\Delta t + b \sec\phi$.	Equator Point (S.)	(N.)	Standard Stars.
1889.	s	s	s	s	° ′ ″	″	
June 10	+0·184	−0·068	+0·080	− 33·41	171 36 27·30	26·90	3(α), 4, 5, 6, 9
July 3	+0·243	−0·148	+0·051	− 72·11	27·36	27·03	2, 3, 5, 6, 8
29	+0·154	−0·159	+0·022	−127·10	25·73	25·61	1, 2, 3, 5, 6, 8
Aug. 17	+0·221	+0·276	+0·056	− 48·15	26·90	27·41*	3, 5, 6, 7, 10
20	+0·198	+0·214	+0·047	− 54·88	26·78	26·80	1, 2, 3, 6, 7, 8

Observations of the planet Victoria.

[The places given in this list are not corrected for annual aberration or parallax.]

Date.	App. R.A.	App. Decl.	Remarks.
1889.	h m s	° ′ ″	
July 3	19 54 15·66	−5 44 45·6	V.v. faint. Dark field.
29	33 28·78	−4 40 5·9	Faint. Bright field.
Aug. 17	24 56·71	−5 29 28·9	
20	24 41·65	−5 41 35·1	Dark field. Through clouds.

* Only two readings of Nadir-point.

1891MNRAS..51..119R

Observations of Victoria Comparison Stars.

No.	D.M.	Date.	R.A. 1889·0.			Decl. 1889·0.			Remarks.
		1889.	h	m	s	°	′	″	
a	−8°, 4887	July 3	19	6	39·39	−8	7	27·1	
		29			39·44			27·7	
		Aug. 17			39·50			29·5	
		20			39·35			27·5	Decl. good.
			19	6	39·420	−8	7	27·95	
b	−5°, 4936	June 10	19	14	37·28	−5	37	21·3	Unsteady.
		July 3			37·38			19·6	Perhaps a little too much south.
		29			37·30			20·6	
		Aug. 17			37·36			22·3	
		20			37·31			21·5	
			19	14	37·326	−5	37	21·06	
1	−6°, 5151	June 10	19	21	25·22	−5	57	22·2	Unsteady.
		July 3			25·30			20·2	V. faint. Dark field.
			19	21	25·260	−5	57	21·20	
2	−6°, 5158	July 29	19	23	2·71	−6	24	0·2	Unsteady. Bright field.
6	−5°, 5006	June 10	19	27	50·40	−4	58	49·6	Unsteady.
		July 3			50·61			49·4	V. faint. Dark field.
		29			50·53			49·1	Bright field.
			19	27	50·513	−4	58	49·37	
9	−5°, 5021	Aug. 20	19	30	41·13	−5	1	2·2	
12	−4°, 4861	17	19	31	54·00	−4	53	40·6	
15	−4°, 4883	June 10	19	35	55·94	−4	32	50·5	Unsteady.
		July 3			56·09			49·2	Faint. Dark field.
		Aug. 20			56·09			49·4	Dark field. Clouds.
			19	35	56·040	−4	32	49·70	
16	−4°, 4903	July 29	19	39	23·65	−4	47	22·3	Dark field.
		Aug. 17			23·77			23·5	Dark field.
			19	39	23·710	−4	47	22·90	
17	−4°, 4916	Aug. 20	19	40	59·39	−3	56	0·0	Dark field.

1891MNRAS..51..119R

No.	D.M.	Date. 1889.	R.A. 1889·0. h m s	Decl. 1889·0. ° ′ ″	Remarks.
19	−4°, 4926	June 10	19 43 4·49	−4 46 19·1	Unsteady.
		July 3	4·54	18·8	Dark field.
		29	4·54	20·3	Dark field.
		Aug. 17	4·40	17·8	Dark field.
			19 43 4·492	−4 46 19·00	
22	−4°, 4960	Aug. 20	19 47 27·16	−4 51 31·4	Dark field.
23	−5°, 5099	July 3	19 48 22·59	−5 19 59·3	
		Aug. 17	22·46	59·9	Dark field.
			19 48 22·525	−5 19 59 60	
24	−5°, 5120	June 10	19 51 25·92	−4 58 53·5	Unsteady. Daylight getting very bright.
		July 29	25·94	52·4	
			19 51 25·930	−4 58 52·95	
27	−4°, 4984	Aug. 20	19 52 38·10	−4 39 16·2	Dark field. Good.
28	−4°, 4992	Aug. 17	19 54 57·31	−4 36 53·7	
31	−8°, 5205	June 10	19 57 4·84	−8 0 13·7	Unsteady. Daylight getting very bright.
32	−5°, 5144	July 29	19 57 21·86	−4 56 27·6	Bright field.
		Aug. 20	21·69	27·8	Bright field.
			19 57 21·775	−4 56 27·70	
34	−4°, 5016	Aug. 17	20 0 44·87	−4 44 4·4	
35	−7°, 5169	July 3	20 0 46·87	−7 19 56·2	Dark field.
37	−9°, 5382	July 3	20 5 8·99	−9 10 13·2	Dark field.
		29	8·95	12·7	Bright field. Good.
		Aug. 17	8·98	13·7	Set in decl. after transit at IV. Dark field.
		20	8·82	12·1	
			20 5 8·935	−9 10 12·92	
c	−6°, 5451	June 10	20 14 31·40	−6 42 29·0	Unsteady.
		July 3	31·60	29·3	
		29	31·58	28·1	
		Aug. 17	31·58	29·8	
		20	31·52	29·2	
			20 14 31·536	−6 42 29·08	

1891MNRAS..51..119R

No.	D.M.	Date. 1889.	R.A. 1889·0 h	m	s	Decl. 1889·0 °	′	″	Remarks.
d	−3°, 4888	July 3	20	19	55·06	−3	9	35·6	
		29			54·95			34·5	
		Aug. 17			55·08			35·6	
		20			55·04			34·2	
			20	19	55·032	−3	9	34·98	

(II.) *Sappho and Comparison Stars.*—The standard stars selected from the *Berliner Jahrbuch* for the *Sappho* series are contained in the following list:—

List of Standard Stars.

No.	No. in Fund. Cat.	Name.	R.A. 1889·0 h	m	s	Decl. 1889·0 °	′	″
1	538	*φ* Pegasi	23	46	50·439	+18	30	13·34
2	336	*ω* Piscium	23	53	36·659	+ 6	14	55·58
3	339	12 Ceti	0	24	22·442	− 4	34	14·84
4	25	*ο* Piscium	1	39	31·894	+ 8	35	55·56
5	29	*ξ* Piscium	1	47	48·536	+ 2	38	21·19
6	33	*α* Arietis	2	0	54·962	+22	56	14·04
7	334	*γ* Cephei, U.C.	23	34	47·756	+77	0	45·76
8	168	4 H. Draconis, L.C.	12	6	59·505	+78	13	59·42

The last two stars on this list, Nos. 7 and 8, have been observed only in right ascension for the determination of the azimuth correction. Both of these were observed on every occasion with the exception of the three following dates—November 18 and 28 and December 15—on which clouds interfered with the transit of one or other of them.

1891MNRAS..51..119R

Table of Instrumental Corrections at 0h·5 *Sidereal Time.*

Date.	Clamp.	Incl.	Azim.	Collim.	$\Delta t + b \sec \phi$	Equator Point (S.)	(N.)	Standard Stars.
1889.		s	s	s	s	° ′ ″	″	
Aug. 30	W	+0·215	+0·079	+0·081	− 76·16	171 36 27·48	26·42	1, 2, 3, 4, 5, 7, 8
Sept. 17	,,	+0·229	+0·022	+0·040	−111·74	28·48	28·49	1, 2, 3, 4, 5, 7, 8
19	,,	+0·252	+0·139	+0·062	−116·02	29·55	28·96	1, 2, 3, 4, 5, 7, 8
24	,,	+0·189	+0·092	+0·025	−126·50	28·57	27·73	1, 2, 4, 5, 7, 8
25	,,	+0·187	+0·123	+0·052	−128·42	28·81	28·28	1, 2, 3, 7, 8
Oct. 7	,,	+0·100	+0·013	+0·006	−150·26	28·55	28·52	1, 2, 4, 5, 7, 8
8	,,	+0·129	+0·343	+0·129	−152·70	29·72	28·68	1, 2, 3 (α), 4, 5, 7, 8
10	,,	+0·078	+0·117	+0·078	−156·58	28·51	27·57	1, 2, 3, 4, 5, 7, 8
11	,,	+0·084	+0·200	+0·084	−158·46	29·31	28·36	1, 2, 3, 4, 5, 7, 8
12	,,	+0·078	+0·088	+0·078	−160·11	28·52	27·91	1, 2, 3, 4, 5, 7, 8
13	,,	+0·081	+0·220	+0·081	−161·92	29·21	28·48	1, 2, 3, 4, 5, 7, 8
30	,,	+0·033	+0·011	[0·000]	−190·14	28·12	27·04	1, 2, 3, 4, 5, 7, 8

		s	s	s	s	° ′ ″	″	
1889. Nov. 16	E	+0·081	+0·264	+0·081	− 32·63	171 37 39·81	39·93	1, 2, 3, 4, 5, 7, 8
18	,,	+0·055	+0·210	+0·055	− 34·83	39·16	39·83*	3, 4, 5, 8
19	,,	+0·056	+0·128	+0·056	− 35·95	39·66	39·52	1, 2, 3, 4, 5, 7, 8
25	,,	+0·077	+0·273	+0·077	− 44·19	40·62	40·56	1, 2, 3, 4, 5, 7, 8
27	,,	+0·042	−0·033	−0·041	− 47·35	40·01	39·86	1, 2, 3, 4, 5, 7, 8
28	,,	+0·035	−0·026	[−0·033]	− 48·92	40·47	...	3, 5, 6, 8
Dec. 7	,,	−0·022	+0·207	+0·043	− 59·95	39·10	39·03	1, 2, 3, 4, 5, 7, 8
10	,,	−0·040	+0·221	+0·068	− 63·63	39·01	38·17*	1, 2, 3, 4, 5, 7, 8
11	,,	−0·022	+0·088	+0·049	− 64·88	40·61	40·27	1, 2, 3, 4, 5, 7, 8
15	,,	−0·062	−0·095	+0·006	− 70·02	38·76	...	1, 2, 3, 7
20	,,	0·000	+0·070	+0·059	− 74·14	40·26	...	1, 2, 3, 4, 5, 7, 8
24	,,	+0·008	+0·072	+0·059	− 78·50	39·74	...	1, 2, 3, 4, 5, 7, 8
1890. Jan. 2	W	−0·039	−0·074	+0·026	− 86·79	171 36 26·05	25·87†	1, 2, 3, 4, 5, 7, 8

* Only two readings of the Nadir point.

† Only one reading.

1891MNRAS..51..119R

Observations of the Planet Sappho.

[The places given in this list are not corrected for annual aberration or parallax.]

Date.		App. R.A.			App. Decl.			Remarks.
		h	m	s	°	′	″	
Sept.	17	1	9	9·73	+17	9	38·5	Dark field. Appears 9$^{\mathrm{m}}$.
	24	1	5	34·82	+16	9	49·7	Distinctly fainter than D.M. + 16°, 123, slightly fainter than, but almost exactly equal to D.M. + 15°, 173. A very deliberate, good comparison. Estimated mag. 9·2.
Oct.	7	0	56	52·52	+13	42	7·9	Dark field.
	8	0	56	10·24	+13	29	25·0	
	10		...		+13	3	38·3	Appeared through clouds just at edge of field.
	11	0	54	4·89	+12	50	41·8	Distinctly brighter than D.M. + 12°, 120, a little brighter than D.M. + 12°, 123. Estimated mag. 8·9.
	12	0	53	23·97	+12	37	39·8	Seemed same mag. as D.M. + 12°, 120 (i.e. 9·5), but comparison was hurried.
	13	0	52	43·57	+12	24	34·6	Estimated 9$^{\mathrm{m}}$·2. Brighter than D.M. + 8°, 139. Dark field.
	30	0	43	59·08	+8	51	31·1	Varying in brightness through clouds. Dark field.

1891MNRAS..51..119R

Observations of Sappho Comparison Stars.

No.	D.M.	Date.	Clamp.	R.A. 1889·0.	Decl. 1889·0.	Remarks.
		1889.		h m s	° ′ ″	
e	+10°, 065	Aug. 30	W	0 31 32·15	+10 49 32·3	
		Sept. 17	„	31·97	31·2	
		19	„	32·05	32·7	
		24	„	32·09	32·0	
		25	„	31·95	33·2	
		Oct. 7	„	32·05	33·0	
		8	„	32·04	31·5	Only five wires.
		10	„	32·01	31·9	
		11	„	32·09	31·8	
		12	„	32·04	32·0	Good.
		13	„	32·02	32·0	
		30	„	31·99	31·6	Definition bad.
		Nov. 16	E	32·03	32·1	
		18	„	32·10	32·2	
		19	„	32·02	31·8	
		25	„	32·03	32·9	
		27	„	32·09	31·9	Decl. bad. Very unsteady when setting.
		28	„	32·11	32·6	Rather faint. Clouds.
		Dec. 7	„	31·99	33·1	
		10	„	32·05	32·7	See note (*a*).
		11	„	32·02	32·9	Dark field.
		15	„	31·90	32·6	Dark field.
		20	„	32·05	32·9	
		24	„	32·03	32·2	
		1890. Jan. 2	W	32·02	32·0	
				0 31 32·036	+10 49 32·28	

1891MNRAS..51..119R

No.	D.M.	Date.	Clamp.	R.A. 1889·0.			Decl. 1889·0.			Remarks.
		1889.		h	m	s	°	′	″	
/	+15°, 106	Aug. 30	W	0	37	4·28	+16	3	23·7	
		Sept. 17	,,			4·20			24·5	
		19	,,			4·29			24·4	
		24	,,			4·34			23·5	
		25	,,			4·20			23·9	
		Oct. 7	,,			4·27			24·0	
		8	,,			4·26			23·1	
		10	,,			4·22			23·6	
		11	,,			4·29			23·9	
		12	,,			4·32			23 9	
		13	,,			4·27			22·6	
		30	,,			4·28			23·3	Definition bad. Set hurriedly in decl., but seemed good.
		Nov. 16	E			4·24			22·7	
		18	,,			4·26			23·0	
		19	,,			4·24			22·8	
		25	,,			4·24			23·0	
		27	,,			4·32			23·9	
		28	,,			[4·43]			23·2	Dark field. Very faint through clouds.
		Dec. 7	,,			4·25			22·6	
		10	,,			4·23			22·7	
		11	,,			4·26			22·6	Dark field.
		15	,,			4·16			23·8	See note (*b*).
		20	,,			4·27			22·8	
		24	,,			4·27			22·6	
		1890.								
		Jan. 2	W			4·28			24·2	
				0	37	4·260	+16	3	23·37	
		1889.								
1	+ 8°, 110	Aug. 30	W	0	42	25·31	+ 8	36	56·4	Rather faint for bright field.
		Sept. 17	,,			25·25			57·2	
		Oct. 12	,,			25·24			56·9	Faint.
		Nov. 18	E			25·28			56·1	
		28	,,			25·25			57·2	Dark field. Faint through clouds.
				0	42	25·266	+ 8	36	56·76	

1891MNRAS..51..119R

No.	D.M.	Date.	Clamp.	R.A. 1889·0.	Decl. 1889·0.	Remarks.
		1889.		h m s	° ′ ″	
2	+ 9°, 090	Sept. 19	W	0 42 31·09	+ 9 39 11·8	
		Oct. 11	„	31·05	11·5	
		Dec. 10	E	31·06	11·3	Faint through clouds.
				0 42 31·067	+ 9 39 11·53	
3	+ 11°, 102	Sept. 25	W	0 44 24·23	+ 11 13 36·8	Dark field.
		Nov. 25	E	24·35	36·2	Dark field. Not so bright as 8$^{\mathrm{m}}$·6.
		27	„	24·35	36·5	Dark field.
		1890. Jan. 2	W	24·33	...	Dark field.
				0 44 24·315	+ 11 13 36·50	
4	+ 9°, 097	1889. Oct. 7	W	0 44 46·76	+ 9 48 25·7	
		Nov. 16	E	46·77	23·5	
		Dec. 11	„	46·78	24·6	
				0 44 46·770	+ 9 48 24·60	
5	+ 11°, 106	Sept. 24	W	0 45 46·18	+ 12 10 52·3	
		Oct. 8	„	46·12	52·4	Thin clouds.
		13	„	46·14	51·9	
		Nov. 19	E	46·10	52·3	
		Dec. 7	„	46·14	52·8	
		15	„	46·08	53·1	Dark field. Decl. good.
				0 45 46·127	+ 12 10 52·47	
6	+ 9°, 099	Oct. 10	W	0 46 20·51	+ 9 59 53·0	Dark field. Clouds.
		Dec. 20	E	20·46	53·3	
		24	„	20·46	52·4	Dark field. Only 5 wires. Decl. good.
		1890. Jan. 2	W	20·34	52·2	Dark field. R.A. ½ weight.
				0 46 20·457	+ 9 59 52·72	
7	+ 12°, 104	1889. Oct. 12	W	0 46 40·02	+ 13 2 44·5	
		Nov. 28	E	40·01	43·9	Dark field.
				0 46 40·015	+ 13 2 44·20	
8	+ 9°, 101	Aug. 30	W	0 47 0·68	+ 9 12 3·9	
		Dec. 10	E	0·62	6·2	
				0 47 0·650	+ 9 12 5·05	

1891MNRAS..51..119R

No.	D.M.	Date. 1889.	Clamp.	R.A. 1889·0 h m s	Decl. 1889·0 ° ′ ″	Remarks.
9	+ 10°, 105	Sept. 17	W	0 48 3·00	+ 10 31 11·7	
		19	„	2·92	11·9	
		Oct. 11	„	2·91	14·4	
		Nov. 18	E	3·01	11·8	Faint.
				0 48 2·960	+ 10 31 12·45	
10	+ 12°, 108	Oct. 30	W	0 49 12·00	+ 12 14 44·4	
		Nov. 25	E	11·96	44·8	
				0 49 11·980	+ 12 14 44·60	
11	+ 13°, 127	Sept. 25	W	0 50 19·67	+ 13 21 1·9	
		Nov. 19	E	19·62	1·1	
		Dec. 20	„	19·67	1·8	
				0 50 19·653	+ 13 21 1·60	
12	+ 11°, 118	Oct. 8	W	0 50 40·41	+ 12 6 44·3	Very changeable through clouds.
		Nov. 27	E	40·39	45·4	Dark field.
				0 50 40·400	+ 12 6 44·85	
13	+ 13°, 130	Oct. 10	W	0 50 52·36	+ 14 10 32·0	Dark field. V. faint through clouds.
		Dec. 7	E	52·24	29·3	
				0 50 52·300	+ 14 10 30·65	
14	+ 9°, 110	Oct. 7	W	0 50 59·21	+ 9 24 54·4	Dark field.
		Dec. 11	E	59·27	53·6	Faint.
				0 50 59·240	+ 9 24 54·00	
15	+ 11°, 120	Sept. 24	W	0 51 32·84	+ 11 49 44·8	Definition bad.
		Nov. 16	E	32·80	46·1	
		Dec. 24	„	32·93	46·8	
				0 51 32·857	+ 11 49 45·90	
16	+ 12°, 119	Aug. 30	W	0 52 4·99	+ 13 5 44·8	
		Nov. 18	E	5·04	45·3	
		28	„	4·99	45·4	Dark field. Excellent.
		Dec. 15	„	4·89	46·1	Dark field. Decl. good.
		1890. Jan. 2	W	5·01	44·2	
				0 52 4·984	+ 13 5 45·16	

1891MNRAS..51..119R

No.	D.M.	Date.	Clamp.	R.A. 1889·0.			Decl. 1889·0.			Remarks.
		1889.		h	m	s	°	′	″	
17	+13°, 143	Sept. 17	W	0	53	53 66	+14	0	39·2	
		Dec. 10	E			53·71			37·5	Dark field.
				0	53	53·685	+14	0	38 35	
18	+10°, 115	Oct. 30	W	0	55	25·55	+10	34	59 0	
		Dec. 20	E			25·55			59·3	
				0	55	25·550	+10	34	59 15	
19	+11°, 135	Sept. 19	W	0	55	32·91	+11	18	53·0	Dark field.
		Nov. 19	E			32·84			50·6	
		25	„			33·03			...	
		27	„			32·92			51·5	
		Dec. 12	„			32·83			51·6	
				0	55	32·906	+11	18	51 67	
20	+13°, 150	Sept. 25	W	0	56	43·39	+13	39	19·8	
		Nov. 18	E			43·57			18·3	
		Dec. 11	„			43·57			17·1	
				0	56	43·510	+13	39	18·40	
21	+15°, 154	Nov. 16	E	0	57	9·69	+15	32	26·5	
		1890. Jan. 2	W			9·62			26·5	Very faint.
				0	57	9·655	+15	32	26·50	
22	+12°, 126	1889. Sept. 24	W	0	57	16·37	+12	27	10 1	
		Dec. 24	E			16·35			10·8	
				0	57	16·360	+12	27	10·45	
23	+13°, 155	Oct. 13	W	0	58	0·46	+13	20	27·5	
24	+14°, 163	Aug. 30	„	0	59	13·72	+14	20	57·1	
		Sept. 17	„			13·73			56·6	
		Oct. 12	„			13·72			56·3	Unsteady. Dark field.
		Nov. 28	E			13·78			56·9	
		Dec. 15	„			13·67			56·5	
				0	59	13·724	+14	20	56·68	

1891MNRAS..51..119R

No.	D.M.	Date.	Clamp.	R.A. 1889·0.	Decl. 1889·0.	Remarks.
		1889.		h m s	° ′ ″	
25	+14°, 168	Oct. 11	W	0 59 57·06	+14 23 16·4	Illumination of wires bad.
		Dec. 10	E	56·97	15·8	Dark field.
				0 59 57·015	+14 23 16·10	
25*a*	+14°, 169	Nov. 19	E	1 0 4·30	+14 47 23·8	
		25	„	[4·65]	[22·9]	See note (*c*).
		Dec. 7	„	4·29	24·6	
				1 0 4·295	+14 47 24·20	
26	+15°, 159	Nov. 27	E	1 0 29·64	+15 43 10·4	
		Dec. 20	„	29·61	10·0	Very faint through clouds.
				1 0 29·625	+15 43 10·20	
27	+15°, 164	Sept. 19	W	1 1 59·51	+15 16 15·7	Very faint through clouds. Dark field.
		Oct. 8	„	59·47	15·5	
		Nov. 18	E	59·52	16·3	
				1 1 59·500	+15 16 15·83	
28	+16°, 116	Oct. 7	W	1 2 2·09	+16 49 12·0	
		Dec. 11	E	2·17	10·9	Good.
				1 2 2·130	+16 49 11·45	
29	+16°, 119	Sept. 25	W	1 2 34·87	+17 3 [43·9]	See note (*d*).
		Oct. 10	„	34·84	41·0	Dark field.
		13	„	34·84	40·7	Definition not good. Dark field.
		Nov. 16	E	34·84	41·1	
		Dec. 24	„	34·88	41·2	
				1 2 34·854	+17 3 41·32	
30	+14°, 175	Sept. 17	W	1 4 18·33	+15 4 59·2	
		Nov. 28	E	18·32	59·4	
		Dec. 15	„	18·20	59·6	
				1 4 18·283	+15 4 59·40	
31	+17°, 166	Oct. 12	W	1 5 3·71	+17 48 6·8	
		Dec. 10	E	3·72	6·5	Dark field.
				1 5 3·715	+17 48 6·65	

1891MNRAS..51..119R

No.	D.M.	Date	Clamp.	R.A. 1889·0.			Decl. 1889·0.			Remarks.
		1889.		h	m	s	°	′	″	
32	+16°, 123	Aug. 30	W	1	5	10·11	+16	11	12·5	
		Oct. 30	„			10·23			12·7	Definition bad.
		Nov. 19	E			10·18			12·9	
		Dec. 20	„			10·24			12·4	
				1	5	10·190	+16	11	12·62	
33	+13°, 175	Oct. 1	W	1	5	24·04	+14	6	6·1	
		Nov. 27	E			24·04			6·0	
		Dec. 7	„			24·05			6·9	
				1	5	24·043	+14	6	6·33	
34	+15°, 175	Oct. 7	W	1	6	55·79	+16	10	29·7	
		Dec. 11	E			55·82			29·3	
				1	6	55·805	+16	10	29·50	
35	+15°, 177	Oct. 8	W	1	8	13·76	+15	32	45·1	
		13	„			13·80			45·4	Dark field. Good.
		Nov. 16	E			13·82			44·2	
		18	„			13·88			44·9	
				1	8	13·815	+15	32	44·90	
36	+16°, 129	Oct. 10	W	1	10	15·81	+17	2	54·1	Darkfield. Clouds.
		12	„			15·72			53·9	
		30	„			15·78			53·7	
		Nov. 27	E			15·81			53·7	Ill-defined.
		28	„			15·79			54·0	
		Dec. 24	„			15·75			53·2	
				1	10	15·777	+17	2	53·77	
37	+15°, 185	Sept. 19	W	1	11	34·45	+15	46	10·2	Very faint through clouds at times. Dark field.
		25	„			34·25			9·1	Dark field. Very faint.
		Oct. 11	„			34·30			7·7	
		Nov. 19	E			34·35			9·4	Dark field.
		Dec. 7	„			34·41			9·0	Dark field. Light clouds.
		10	„			34·26			8·2	Dark field.
				1	11	34·337	+15	46	8·93	

1891MNRAS..51..119R

No.	D.M.	Date.	Clamp.	R.A. 1889·0.	Decl. 1889·0.	Remarks.
		1889.		h m s	° ′ ″	
38	+17°, 183	Aug. 30	W	1 12 26·01	+17 59 30·8	
		Sept. 24	,,	26·10	31·8	
		Oct. 7	,,	26·06	32·9	
		8	,,	25·99	32·2	
		Nov. 18	E	26·00	30·8	
		Dec. 11	,,	26·05	31·6	
		15	,,	25·95	31·9	Dark field.
		20	,,	26·04	31·7	
				1 12 26·025	+17 59 31·71	
g	+10°, 171	Aug. 30	W	1 17 2·12	+10 47 13·0	Only five wires.
		Sept. 17	,,	2·19	14·7	
		19	,,	2·16	12·8	Declination appeared good. Only five wires.
		24	,,	2·20	13·7	
		25	,,	2·03	14·7	Very changeable through clouds. Dark field.
		Oct. 7	,,	2·17	14·2	
		8	,,	2·16	14·2	
		10	,,	2·17	13·6	Very good.
		11	,,	2·17	13·7	Very good.
		12	,,	2·14	13·9	
		13	,,	2·16	14·1	
		30	,,	2·20	13·8	
		Nov. 16	E	2·18	13·4	
		18	,,	2·19	13·5	
		19	,,	2·15	12·8	
		25	,,	2·11	14·4	Dark field.
		27	,,	2·23	14·3	Ill-defined.
		28	,,	2·21	14·4	
		Dec. 7	,,	2·16	13·6	Dark field.
		10	,,	2·17	14·5	Good.
		11	,,	2·16	13·6	
		15	,,	2·17	15·6	Dark field. Decl. seems good.
		20	,,	2·14	14·0	
		24	,,	2·13	13·5	
		1890. Jan. 2	W	2·11	14·3	Good.
				1 17 2·159	+10 47 13·93	

1891MNRAS..51..119R

No.	D.M.	Date.	Clamp.	R.A. 1889·0.	Decl. 1889·0.	Remarks.
		1889.		h m s	° ′ ″	
h	+16°, 154	Aug. 30	W	1 22 25·99	+16 30 16·3	
		Sept. 17	,,	26·04	16·9	
		19	,,	25·96	16·5	
		24	,,	25·98	16·1	
		25	,,	25·80	18·3	Dark field. Just visible through clouds.
		Oct 7	,,	25·95	17·0	
		8	,,	25·87	16·6	
		10	,,	25·92	16·7	Very good.
		11	,,	25·87	16·9	Definition beautiful.
		12	,,	25·92	15·9	Rather unsteady.
		13	,,	25·95	16·9	
		30	,,	25·92	16·4	
		Nov. 16	E	25·95	17·5	
		18	,,	25·93	17·5	
		19	,,	25·94	16·6	
		25	,,	25·98	16·8	
		27	,,	26·04	17·2	Good.
		28	,,	25·99	18·0	
		Dec. 7	,,	25·88	16·9	
		10	,,	25·93	16·8	Good.
		11	,,	26·01	16·6	Very good.
		15	,,	25·82	18·0	Dark field. Very faint.
		20	,,	25·91	19·1	Variable and ill-defined through clouds.
		24	,,	25·96	17·3	
		1890. Jan. 2	W	25·98	16·4	Good.
				1 22 25·940	+16 30 17·01	

Notes.

(*a*) Variable in brightness. Faint at times through clouds. Bright field.

(*b*) Transit over first set of wires good in a bright field. Clouds at middle wire. Decl. and second set of wires observed in dark field.

(*c*) Only three wires. Set in decl. through a break in clouds.

(*d*) Microscope V. read at once. The other three not till after the transit of *h*. This was done to get *Sappho*, which, however, was lost in clouds. Dark field. Weight, ½ in decl.

1891MNRAS..51..119R

Probable Error of the Resulting Places.

In computing the probable error of these results, I have contented myself with the observations of the four stars which I call *e*, *f*, *g*, and *h*, as it appeared that the comparatively large number of observations obtained for each of these stars would give a more reliable result than could be obtained by taking the difference between each separate result and the mean of a small number of results for each star as the basis of calculation. All the stars of the list, too, being included between +8° and +18° of declination, and all being observed under exactly similar circumstances, any result applicable to the stars *e*, *f*, *g*, *h* will be equally so to the other stars of the list.

From all the observations of *e*, *f*, *g*, *h*, including the right ascension of *f*, on November 28, although this observation has been neglected in taking the mean, I find as the probable error of a single determination of right ascension, reduced to the equator, the quantity

$$\pm 0^{s}\cdot033,$$

while the probable error of a single determination of declination similarly computed is

$$\pm 0''\cdot42$$

Spectroscopic Results for the Motions of Stars in the Line of Sight, obtained at the Royal Observatory, Greenwich, in the year 1890. *No. XIV.*

(*Communicated by the Astronomer Royal.*)

The Results here given are in continuation of those printed in the *Monthly Notices*, vol. xxxvi. p. 318, vol. xxxvii. p. 32, vol. xxxviii. p. 493, vol. xli. p. 109, vol. xlii. p. 230, vol. xliii. p. 81, vol. xliv. p. 89, vol. xlv. p. 330, vol. xlvi. p. 126, vol. xlvii. p. 101, vol. xlviii. p. 116, vol. xlix. p. 127, and vol. l. p. 111.

The observations were made with the "half-prism" spectroscope, one "half-prism," with a dispersion of about 18½° from A to H, being used throughout. A magnifying power of 14 was employed.

The cylindrical lens has always been used in front of the slit, as in the observations made previously to 1881 and since 1882, March 14. The observations of the Sun, Moon, and planets have been made as a check on the general accuracy of the results.

The day specified in the first column is the civil day, and the hour is that of Greenwich civil time, commencing at Greenwich mean midnight, and reckoning from 0 to 24 hours.

The observations were made by Mr. Maunder throughout.